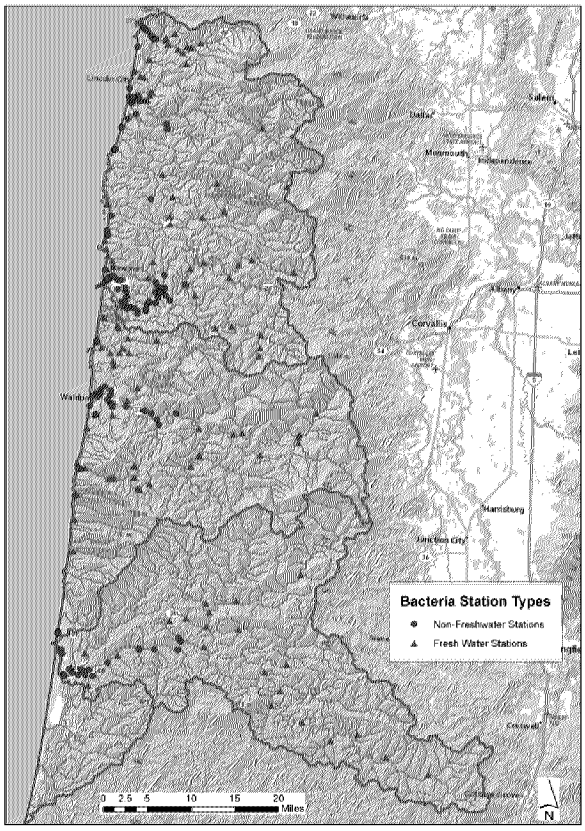
Details of Bacteria Station Grouping

Mid-Coast Bacteria TMDL

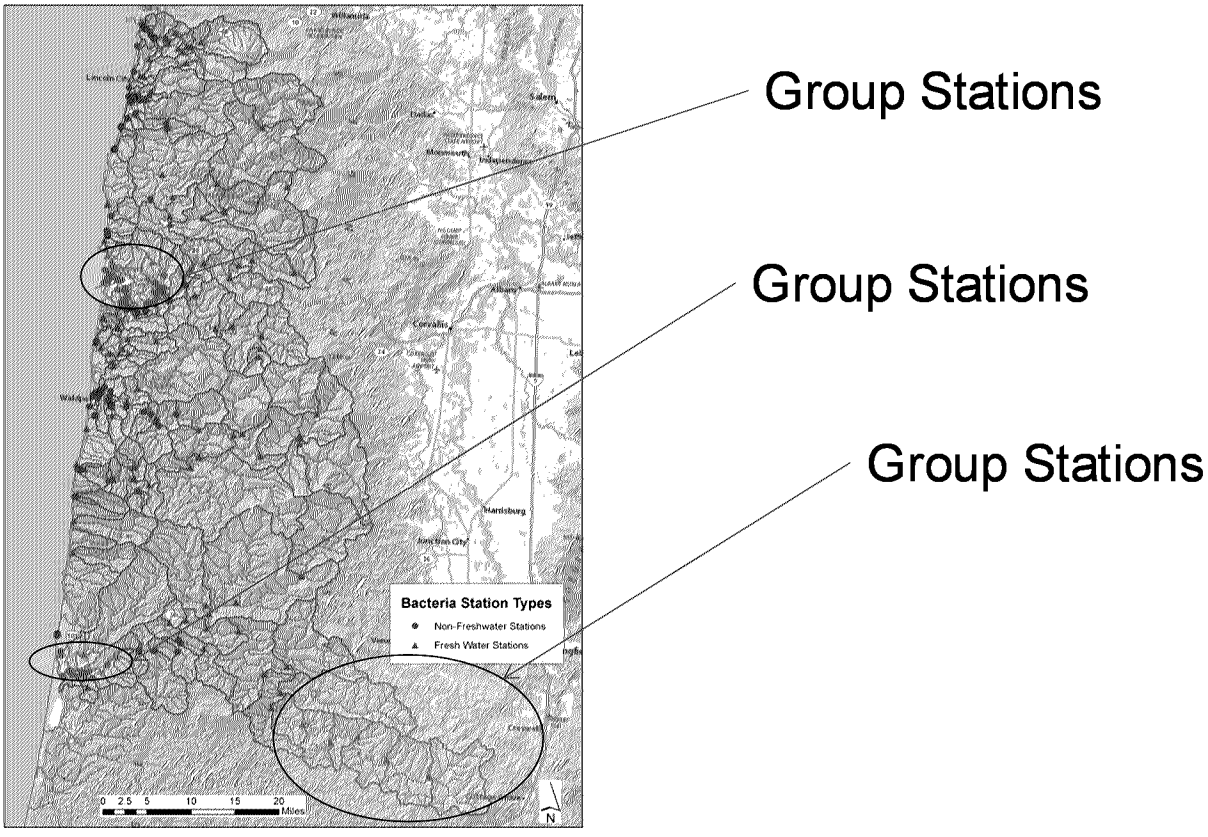
This document outlines the draft approach for grouping the bacteria stations that we discussed during the last Technical Working Group (TWG) meeting. The objective of the station grouping is to reduce the number of Load Duration Curves we will calculate while maintaining key watershed characteristics. The level of detail in this document is greater than we provided in presentation. Please review and comment on the approach. Your input is greatly appreciated.

Bacteria Station Locations



- 262 stations
  - 127 Freshwater
  - 135 Ocean or Estuary
- Varying number of samples
- Varying period of record

Bacteria Station Watersheds and Grouping Example



Draft Approach

- Group stations together
  - Hydrologic connectivity
  - Similar watershed characteristics
  - Close proximity
- Criteria for grouping apply to the most upstream station
- Calculate Load Duration Curve
  - Estimate flow for most downstream station
  - Calculate daily loads using all bacteria concentrations

Hydrologic Conductivity

- On the same named reach/stream
- No major confluences between stations
  - Tributary with drainage area greater than 10% of the aggregate drain area
  - Tributary with at least one bacteria station

Similar watershed characteristics and Close Proximity

- Ratios of landuse categories are within ±5%
  - Landuse categories:
  - Forest
  - Pasture
  - Developed
  - Use cross-reference table from Big Elk Creek modeling to aggregate NLCD categories
- Channel Slopes are within ±5%
- Distance between each station ≤ 1 mile
  (most upstream and downstream stations could be more than a mile apart)
- Travel time between stations ≤ 5 hrs
  - Calculated from 1st-order decay rate used in Big Elk Creek
    - Inverse of FSTDEC (1.15/day) = 0.87 days * 24 hrs = 21 hrs
    - One quarter of FSTDEC inverse = 5.25 hrs for Margin of Safety
- Calculate travel time using estimate stream velocity and distance between stations
  - Use Manning's Equation to estimate average stream velocity
  - Divide average stream velocity by distance to estimate travel time